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THE PLACE OF THE MUSEUM in the EDUCATION OF THE BLIND

by

NELSON COON

American Foundation for the Blind
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and
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Foreword

The American Foundation for the Blind, in publishing this monograph on the use of the museum in the education of the blind, welcomes an opportunity to fill one of the many serious gaps in the currently available literature on the blind. We feel that this study has a message for all educators of the blind.

Unfortunately, for far too long a time, the importance of assembling a representative museum collection in a school for the blind often has been overlooked, and the planned use of such a collection has been neglected in all too many schools. This is one phase of the education of the blind where American educators have much to learn from their European confreres.

This monograph shows us what has been possible of achievement in one American school for the blind, when the project was undertaken by someone with enough interest and initiative to carry it through to its goal of providing an important instructional tool to be used by teachers of various subjects. Mr. Coon, it is true, had the advantage of a comprehensive collection to start with. He shows us, however, that a useful museum can be assembled very inexpensively, and that a considerable number of models and objects are available free of charge, if one only takes the time to look for them. Finally, he points out ways in which the collection can be made alive and useful to the teacher, especially through the *Exhibits of the Month.*

We feel sure that this monograph will serve as an inspiration to further development along the lines so ably pioneered by Mr. Coon and his associates.

M. Robert Barnett

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Preface

Everywhere today there is a general re-examination of educational theories and practices and, in step with the times, the museums of the world are fitting themselves into this educational picture. So too, schools for the blind are endeavoring to meet *all* the needs of their pupils as, with the help of psychological tests and scientific study, these needs are discovered. But it is a question, whether or not, along with such general advances, much study has been made of museum techniques for the visually handicapped or if tactual education, as it fits either into the classroom procedure or the life of the blind adult, has been widely considered. Generally in the field of education of the blind there seems to be agreement that tactual experiences *are* important to supplement textbook and verbal instruction but, except in isolated cases (even where objects are available), little use has been made of three-dimensional instructional material. The bibliography of this field of education shows also how cursory has been any investigation of the problem.

With these facts in mind, it has been the purpose of the writer to set down an historical resumé of what *has* been done and what people have *thought* about tactual education, with the hope that such a record might point up the need for a more scientific study of the requirements of a blind learner, be he child or adult. Twelve years' experience as the curator of the Perkins collections have well shown that the classroom teacher is the key person in making a museum collection vital to the child and we can but hope that this report will stimulate educators to investigate the problem and to determine what are the best methods, and what valid results might be obtained by means of this or that presentation.

This, then, is the springboard for a real imaginative use of perhaps not only the tactile sense, but the senses of sound, taste, and smell on which we all, sighted and blind alike, depend so largely, not only for educational enrichment but for emotional and aesthetic satisfactions.

In thus preparing the pages which follow I wish to make especial mention of the help given me not only in the museum work, but in the preparation of this paper, by Miss Frances McGaw who has been my co-worker in the museum from the beginning.

Thanks are due also to a number of volunteers, staff members, and members of the Ediphone-transcribing course, who have been of aid to me in preparing the manuscript. Particular appreciation is due to the several directors of Perkins whose support and understanding have made possible the experimental work we have done.

NELSON COON

February 1953

History of Museum Work with the Blind

The name museum is a word of Greek origin which means realm of the muses, and when we think of a modern art museum we can well understand the usage of the word. The word museum in this paper is used to include public museum collections and even classroom collections, because the present definition of the word museum refers to a collection of specimens of almost any character and is in theory connected with education and enjoyment of anybody.

Through the centuries museums have been thought of variably as collections, cabinets, chambers, repositories, etc. Tracing them back in history would take us to collections of the spoils of war of Rome or even earlier; through the time when great men assembled museums to increase their social prestige, to advance scientific learning, or because of a forthright curiosity about nature. In our own country, very often, museums were started by sea-captains who had more curios than they could house, and it was not until very recently that there came the connotation of the word museum which we have indicated above. In Europe in the nineteenth century the museum was first arranged for inspection by the public, and it was at least fifty years later before its use as a means of education became general.

It was at about this period, too, that educators of the blind first conceived the idea of special collections for the tactual education of the visually handicapped. Here in America the first definite attempt to provide a museum collection was that instigated by Michael Anagnos, when, as Director of Perkins Institution, he brought from Germany an assortment of anatomical models. He continued the collecting actively for five years, and in 1881 the annual report of the school speaks of 1261 items in the museum, mostly in the field of natural history.

But from the background of the history of Perkins Institution and of European schools we do know that Anagnos was only doing in Boston what he had seen being done abroad.

It is quite probable that the beginnings of the museum movement for the blind may be credited to Johann Wilhelm Klein, (called by some the Pestalozzi of the Blind), who, in 1804-1809, in Vienna, first utilized and prepared a collection of teaching models. The museum which he thus founded grew continuously until it became, before its loss in World War II, a museum of some 5000 specimens devoted to all phases of the education and history of the blind, and later presided over by a progressive curator, Mr. Alexander Mell. That this movement was not confined to Vienna, however, is shown by the fact that in 1898 a museum for the blind in Steglitz, Germany issued a forty-page catalog listing and describing the objects which were available for the teaching of the blind in that city.

Other schools for the blind in Germany, Austria, France and England, also knew the importance of tactual observation and were prepared to meet the needs. Dr. Edward E. Allen speaks in his World Conference (1931) report of seeing in 1909 the extensive work being done in the countries mentioned; and in England in 1912 J. A. Carlton Deas of the Sunderland Public Museum made (and recorded) some details of really worth-while efforts to provide for observation of museum material by adults, to such an extent that by 1931, thirty-nine museums in Great Britain had arranged special facilities for showing their collections to the blind.

During the period from 1949-51, the London Science Museum made a feature of providing special exhibits for blind adults, arranging exhibits in a special room for the "hand-viewing" only.

> The Ministry of Education finances the exhibition, which is to last for a month. The models are arranged in a large airy room near the entrance to the Museum, on tables at a convenient height—a little below waist level. Just inside the door is a "touch-plan" of the exhibition. Each table is represented by a small steel block, with the subject printed beneath in braille . . . Notes in braille are placed to the left of each model.*

In the United States the first recorded work by public museums was in 1909 when the American Museum of Natural History instituted a series of lectures for blind people by authorities in special subjects. A year later the museum was favored by the gift of a fund for the special purpose of exhibits for the blind, and eventually a room was arranged with a permanent exhibit and more lectures were given.

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* "London's Exhibits for the Blind"—*Christian Science Monitor,* January 8, 1951.

Other museums in the United States which have provided facilities for the blind are as follows: (with the dates of starting such services)

1913	Metropolitan Museum of Art, New York
1916	Children's Museum, Boston
1920	Brooklyn Museum
1922	Carnegie Museum, Pittsburgh
1922	Chicago Art Institute
1926	City Art Museum, St. Paul
1932	De Young Museum, San Francisco
1932	Cleveland, Ohio, Museum
1939	Fleming Museum, Burlington, Vermont
1939	Newark, New Jersey Museum

From time to time here in Boston cooperative experiments have been made to introduce the blind children of Perkins Institution to the *fine arts*. In the years 1932-33 both the Fogg Museum of Art and the Boston Museum of Fine Arts cooperated in an experiment to the end of making history live through handling art objects with historical and artistic merit.

To say that the efforts as outlined above have been continuous or that they are all in existence at the present time would doubtless be an untruth, but the interesting fact is that the need for such efforts has been recognized almost universally in the Western World. To a great extent the continuation of such efforts depends upon the imagination and energy of the curators or teachers and the availability of facilities and funds for promoting the work. The outlook for the future, however, is indeed encouraging; especially if the emphasis can be put upon the active and planned utilization of museum material, be it in an established "museum" or in the classroom.

Objectives of Museum Work

It is perhaps laboring the point to discuss in two chapters the definition of the word museum, but, whereas in the first chapter we were concerned with the museum from the historical and purely physical aspects we now propose to assess the institution from the educational viewpoint. It is here that we would apply the definition of the museum as "a library of tangible objects," using the word library in the sense that a growing library has more dynamic qualities than the static connotations of a "museum." Gone are the days when any museum wishes to have itself thought of as a mere repository for unwanted objects, or as a cavernous place full of "verboten" signs. No—the museum of 1953 thinks of itself first in its functions as one fountainhead of education, be it education in the finest arts or in a remote branch of science or industry.

With the blind, the museum (an establishment or classroom for child or adult) must usually confine its attention to mundane or common fields, and must think of itself as occupying such a modest place as a substitute for illustrations in a textbook. Within that selective range of subject matter it can, however, fulfill some major needs of the growing or mature student. The possible benefits thus accomplished can be found not only in the physical and mental sides of the person's life, but in the emotional as well.

1. On the physical side, there is the benefit from activity, which takes the place of sedentary study and the persistent use of words. We shall have more to say about the tendency to verbalism in another paragraph. Also in what we might call the physical realm, there would be the stimulation and education of the remaining senses of the blind child. The first of these senses to be so stimulated would be the sense of *touch.*

Here we have a sense which must, to a great extent, become eyes for the blind. Even in the case of everyday objects there are too few opportunities provided for the blind child to observe even the most common things of everyday life. In the average school for the blind, the pupil follows known paths or corridors and comes in contact only with those objects to which the teacher directs him. Ideally the museum should provide those missing contacts with the most common objects, which the classrooom instruction does not provide.

On the subject of the importance of touch it was Diderot who wrote, many years ago, in his influential speculations on the blind that:

> I found that of the senses the eye is the most superficial, the ear the most arrogant, smell the most voluptuous, taste the most superstitious and fickle, *touch the most profound and philosophical.*

Although discussing this sense of touch with a particular field of teaching in mind, some excellent thoughts about the tactual observation of the blind have been made by Mark Shoesmith, a teacher of sculpture to the blind, from whose thesis the following is taken:

> The nature of touch must be fairly understood in presenting art if art is to be an aid in the development of the sense of touch; the latter may be considered the impression received when the skin is contacted by matter. A very important part of the tactual sense is a muscular activity that accompanies it. A static tactual experience means very little until movement occurs, for the objects are significant as they relate to one another. It is a muscular activity that makes possible this uniting into a complete impression. The study of works of sculpture should be muscular as well as tactual if there is to be a true appreciation established. The student may be able to identify it by an outstanding feature, but a full realization of the composition cannot be accomplished without full muscular activity. Complete freedom is essential when presenting sculpture and when working from life.
>
> The value of the study of the plastic arts to the sense of touch, then, is its development of the power of discrimination and as an aid to organize and clarify that which is usually seemingly unrelated series of masses and surfaces. The memory of such objects can best be accomplished through these muscular movements, for it is a massed bodily sensation that leaves its impression. It is actually a physiological experience that becomes a part of the mental equipment.
>
> The teacher of the blind in general and the teacher presenting art especially, must be fully aware of the perceptive abilities of the blind. Sight is a long-range perceptor of the human mechanism, and when it is removed or impaired, the perceptive abilities are terribly lacking in effectiveness.
>
> May I repeat, the greatest possible range of a given perceptive ex-

perience for the blind is the extent of his outstretched arm. The person that knows the visual experience and has the power to form mental pictures can, of course, visualize an object even though it be beyond his perceptive means. The congenitally blind, however, have great difficulty in comprehending the scope of a building, a locomotive, an elephant or anything beyond their reach—unless some objects are reduced to bring them within the perceptive range of the blind.

Not only *touch* but the other senses will be stimulated through properly conceived exhibitions or expeditions. The recognition of objects through smell is always of use to the blind person, and the stimulation of the taste sense will greatly conduce to an appreciation of food and its constituents. Through such things as interestingly arranged exhibits of birds and their music, there can also be stimulation of the sense of hearing.

In the area of kinesthetics as related not only to artistic representations, but to an understanding of self, a field is open to the wise curator, as suggested by Mr. Shoesmith:

> The museum, of course, is a good place to study the portrayal of ideas, emotions and creative designs as understood visually, but that is not the entire purpose of presenting art to the blind. Portrayal and representation as conceived visually are important for the blind to understand, since they are to live in a visual world, and in our work we have made every effort to give them this understanding, largely by conducted tours through museum collections and sculpture shows. This is not always possible, so, a substitute must be found. It was discovered helpful to have the students assume the poses of representative portrayals in sculpture. The Statue of Liberty pose, the Thinker type, or an athletic type, will demonstrate adequately to the blind what the sighted person perceives, portraying concepts and elements in the lives of the sighted, but it is not sufficient merely to observe them tactually. There must be a reproduction of that concept physiologically, and by the muscular contractions that occur in their assuming of the given positions the blind will experience kinesthetically much the same as others do visually.

Further, it should be noted that because the definition of blindness is so wide in the United States as to include a large percentage of partially-sighted children, no museum exhibit or expedition should fail to include ample opportunity for visual observation by those who can to any extent use their sight. With this group it has been found that objects or large pictures in full color are especially attractive, the color possibly having values apart from the artistic arrangement or object in which the colors may be used.

All of the above activities will enlarge the tangible world of the child and reduce to concrete conception many of the verbal ideas which are conveyed to him through reading, radio, and conversation, as well as provide a modicum of physical exertion.

2. The mental processes of the child are also assisted by teaching with the use of tangible objects. Most important is the aid which is given to the assimilation of intricate facts which are incompletely apprehended through the use of words. Of equal value is the stimulation of curiosity, the opportunity to answer the eternal "how" and "why" of the small child. In certain aspects of information there is also the opportunity, through the use of models, of overcoming the squeamishness which develops in many blind children relative to certain foods and surface textures. So, too, through the method of tactual observation, the imagination can be greatly awakened in many children. Through comparative observations, also, judgment can be developed; judgment as to size and spatial relationships as well as artistic concepts.

In this connection it is interesting to read the following from the book by Alma S. Wittlin, *The museum—its history and tasks in education:*

> The following educative qualities of the museum may be tentatively suggested:
>
> (a) The visual method of exhibition conveys to the majority of adults and of children a greater number of facts in less time than if these were expressed by words, written or spoken. The visual and tactile qualities of specimens, their "reality", made an emotional appeal to people which seems to increase their sensibility and capacity to assimilate information of considerable complexity and subtlety.
>
> (b) In addition to imparting facts to people, the museum offers opportunities to challenge them to active cooperation in the process of learning and to stimulate in them certain attitudes, such as the faculty of observation, logical thinking, responsibility, and imagination. In its own way the museum may, better than any other medium of study, offer to people experiences which in the past were acquired by the growing generation through observation of events in their environments. A carefully selected set of specimens in a museum may act as a semblance of an environment, to be viewed or to be used as a scene of activity.

Again of interest along the same line is the remark by Miss Ramsey in her book entitled *Educational work in museums in the United States:*

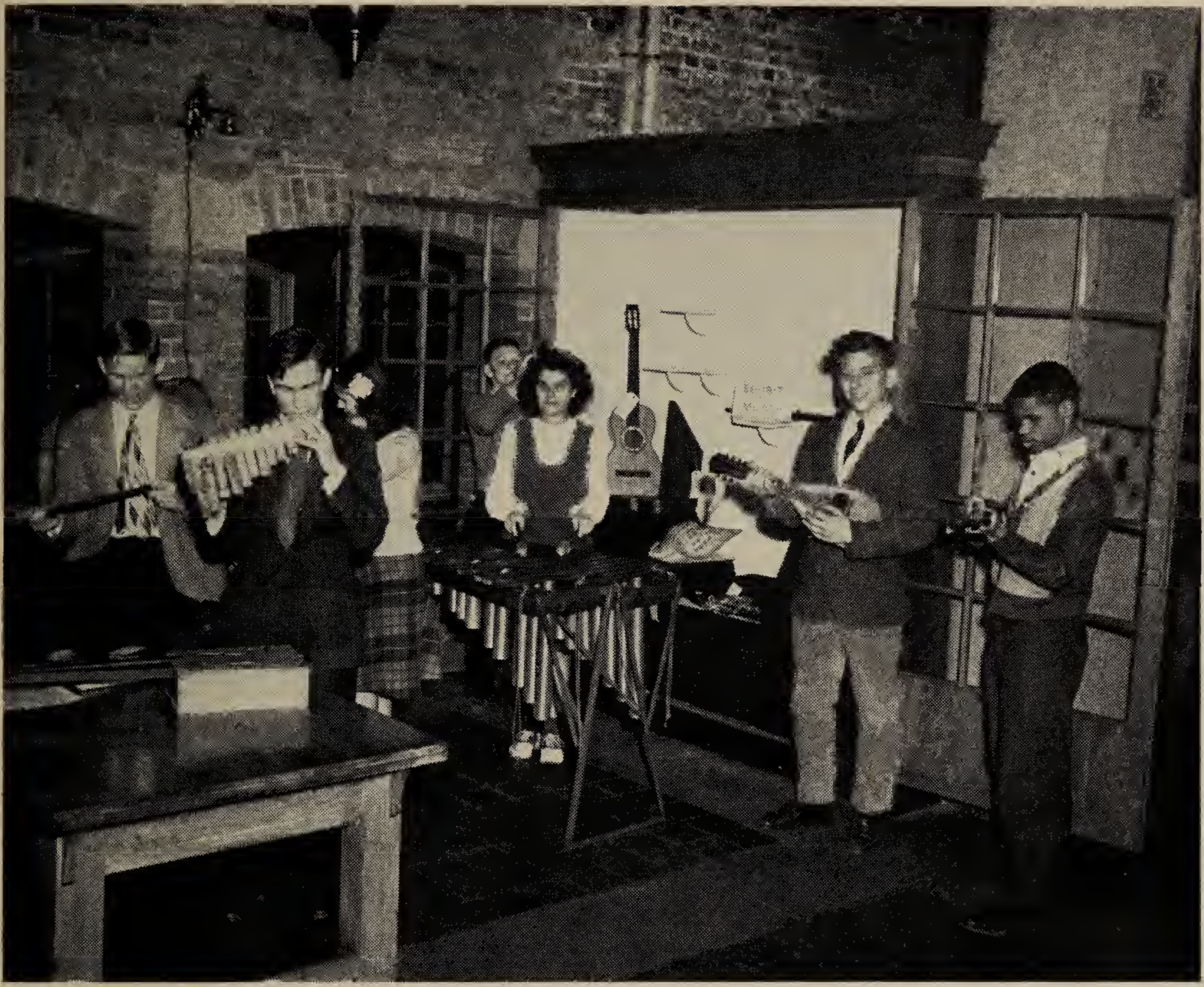
> It has become increasingly evident that what the children touch becomes a part of their personal experience more completely than anything they merely look at, especially through glass. Even the chance to press a button to start mechanism relieves and interests the child even when the most active means of individual research, that of touching and examining at close range, is frustrated.

3. Beyond these purely mental activities there are great values to be had through museum activities, in the emotional area of the individual. With the help of wise teachers, or the museum docent, the beginnings of a philosophy of life can be encouraged. Certainly through investigating suitable objects, delineating the history and cultural development of the past, the individual's own cultural life can be extended, and the highly desirable transfer from parochial to world citizenship begun. It may be countered here that these objectives can be attained through ordinary verbal classroom instruction, but it was the second Director of Perkins Institution, Michael Anagnos, who in the Perkins report of the year 1879 wrote as follows:

> This mode of instruction (tactual observation) is of inestimable value. It bridges over the chasm from the known to the unknown, from the concrete to the abstract, and lays a solid foundation for the mind to work upon. It raises the attention of the pupils and excites their interests. It appeals to experience and stimulates their powers of observation to intense activity. It feeds the mind with real food and raises it out of the slough of inattention and listless inactivity.

4. Last but not least, mention should be made of pure enjoyment. To the small child the mere activity incident to experiencing something new while escaping from the classroom is an enjoyment, while for the more mature individual tactual observation may provide a stimulating form of activity and the means for crystallizing ideas which have been gained through classroom study or through books or radio. Miss Wittlin says, in regard to this aspect of museum work, that:

> The aims of museum work in connection with children, as the present writer sees it, should be the forging of two-fold links, between subjects taught separately at school, and between school learning and



Class at Perkins Institution examining a special exhibit in the museum entitled "Musical Instruments."

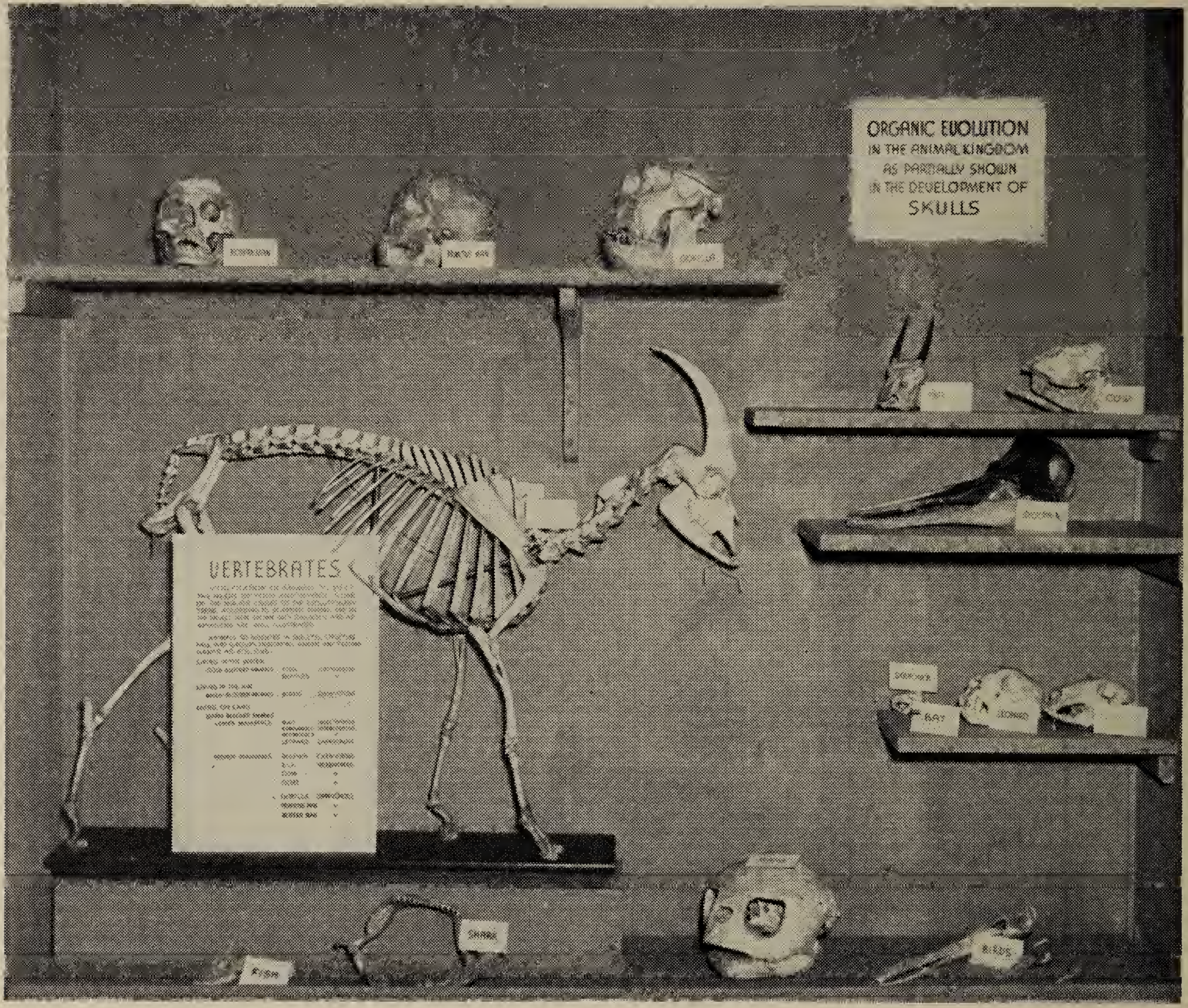


Exhibit case in the Tactual Museum at Perkins Institution.

matters bearing on everyday life. Synthesis is the natural method of the exhibition presenting a number of facts simultaneously, and the appeal of the the three-dimensional, "real" thing heightens children's capacities for comprehending and assimilating information. In this manner facts of considerable complexity and subtlety are likely to be imparted to children. The appeal to their intellectual habits and emotional responses will gain in strength if the museum does not merely offer finished, static displays to be viewed by passive spectators, but becomes a place for a variety of activities.

The total value of the objects which may be observed under a program of tactual education or museum observation depends to a great extent, as has been suggested, upon the viewpoint of the teacher or docent. Whether objects, regarded coldly, have a purely tactual or scientific meaning; whether or not their observation will spell understanding and appreciation, is the question.

Hence it is that ever in the background of the purposes of tactual education for the child or adult, looms the importance of the teacher or curator. In the case of the blind, the need to bring the everyday world to their very doorstep is so great, that the importance of the teacher is highly magnified. This thought is well expressed by a modern English writer, Herbert Read, when in *Education through art,* he says:

> The dispositions which, if it were possible to analyse them, one would find in the soul of a new-born infant, are nothing but aptitudes to receive and conceive the outer world. The world engenders the person in the individual. Thus the world—the whole environment, nature and society—"educates" man; it draws out his powers, allows him to respond to and be convinced by the world. What we call education, conscious and willed, means the *selection of a feasible world* by the individual—means to give the directing force to a selection of the world made under the guidance of the teacher.

The whole matter may, in conclusion, be summed up by suggesting that regardless of the topics or order of study, whether in the realms of science or of art, the purposes of tactual education should lead to the perception of *truth* to make for a more meaningful life.

Materials, with Thoughts on Their Use

In considering a museum for the benefit of the blind, be the museum for adults or for children, be it large or small, be it in a classroom or a museum structure, there are certain considerations that the teacher or curator should bear in mind. It should be understood at the outset that an ideal museum should contain more material than could possibly be housed in a Pentagon building, because the needs of the blind are so much greater than those of the seeing. The commonest objective facts are known to the seeing person from everyday living, from pictures in books and magazines, from movies and similar sources; and hence if we would educate the blind person completely through the use of materials we should have to have a far greater museum than would be necessary for the sighted. Considering the average possibilities of the small collection, the objects fall into a number of very definite classifications. Mr. William T. Heissler has suggested this in an address before the American Association of Instructors of the Blind, at its 1946 convention. He lists in an *increasing order of importance* the following classification of sensory aids:

1. Verbal descriptions.
2. Embossed diagrams and pictures.
3. Analogical models.
4. Large and small-scale models.
5. Full-scale models.
6. Sound recordings.
7. Preserved and mounted specimens.
8. Living and unaltered specimens.

As we know he was making this list from the viewpoint of a science teacher, in my opinion two more classifications might be added: (9) three-dimensional art, (10) special collections of materials affecting the senses of taste and smell.

Mr. Heissler in his talk expanded somewhat these classifications, and in part, had this to say:

1. *Verbal descriptions:* Verbal descriptions have their place in teaching techniques. In many instances the recalling of familiar ex-

periences, which have actual bearing upon or are of analogical value to the topic, will accomplish immediate ends.

Unfortunately, certain pupils will feign understanding either to avoid being conspicuous or just to bluff knowledge of the subject. One must be on constant guard, checking understanding with the use of leading questions.

2. *Embossed diagrams and pictures:* In plane geometry, graph making, and map study embossed diagrams have proven satisfactory. Many teachers, ignoring the absence of perspective, have shown their pupils embossed people, animals, and architecture. It is true that pupils receive impressions from these so-called pictures; the fault, however, is that they merely receive an unusual outline associated with a name.

3. *Analogical models:* When actual models of objects are unobtainable, it is possible to make use of analogical objects. For example: the layers of pages in a closed book may be likened to soil layers or the layers of sedimentary rocks. Two clenched fists may represent the spatial relations and movements of the earth and moon. The blowing of warm, moist breath on a piece of cold glass represents the formation of dew.

Speaking of various sorts of models in a paper prepared for the American Association of Instructors of the Blind in 1940 Miss Rice Woodward had this to say:

> Familiar objects, as pasteboard boxes, are excellent teaching devices in many fields. Used as models for rooms, they give better understanding of even so familiar a place as the classroom. These models could be constructed by the pupils. Crude class-made models of any familiar object larger than can be embraced by the arm sweep are valuable. Objects that can be destroyed during an investigation are very useful.

Mr. Heissler continues:

4. *Large and small-scale models:* While actual size is not possible with these models, there is a similarity of shape and identical proportion of parts.

For objects too small for tactual identification, use can be made of large-scale models.

Plasticene can be used very effectively in modeling bacteria or the microscopic structures of plants and animals.

Small-scale models are usually of such things as buildings, furniture, and animals.

In stepping magnification up or down, one must carefully explain the identity of shape of objects of different sizes. This relationship may best be explained by showing or recalling the similarities between such things as marbles and tennis balls or puppies and dogs. Lack of such explanation is well illustrated by the little blind boy, who, after having been removed from the saddle of the zoo elephant, remarked that he had not been riding on an elephant—elephants were things that you could place on the mantlepiece.

On the subject of the use of specially built models Mr. Edward J. Waterhouse of the Howe Press and Perkins Institution had this to say in a talk on the subject at the convention of the American Association of Instructors of the Blind in 1940:

> Models have many limitations. Perhaps the most serious one is that, in many ways, they are artificial. Most models lack a suitable environment, a natural atmosphere. A model farm-wagon may be complete in every detail, but without the smell of harness, hay, and horse. Without the movement and sounds that are fundamental in our experiences of farming, the wagon is only a lifeless miniature. The pupil has to breathe life into it from his own imagination or from the teacher's, and this task is frequently beyond the scope of their joint capacities.
>
> But in spite of this and other limitations, learning through models can be a rich experience . . . Since the general knowledge of our pupils is abnormally slight, this alone would justify the use of models. What is more important, to my mind, is that the pupil can learn much for himself. He is spared thousands of words, words which are intended to describe, but which, in spite of our best efforts as teachers, so frequently omit too much, or are even misleading . . .

It is not usually possible to include every detail in a model. To concentrate the pupil's attention on essentials, it is often wise to omit things that are not important. The secret of planning a model, which will provide the greatest measure of enrichment lies in the correct choice of what to include and what to leave to the imagination. Since the problem varies, both with the model and with the pupil using it, there can be no perfect solution to it, but the attempt to plan models which will give the greatest satisfaction to our pupils, is surely worth all the attention we can give to it.

We again return to Mr. Heissler:

> 5. *Full-scale models:* Full-scale models eliminate the necessity for explaining the magnification or shrinkage of the model, compared to the actual specimens. Care must be taken, though, to explain the dissimilarity between textures of models and actual specimens. There are excellent commercial models of the viscera, but no stomach or lungs ever possessed surfaces like those of the plaster models.

Many of the models carried by the scientific supply houses are excellent for our needs, but are often quite expensive. In most instances you can fashion very acceptable models in plasticene or some similar compound.

6. *Sound recordings:* The Heissler discussion lists, but does not amplify the subject of sound recording, but it would seem to be a more or less obvious addition to the equipment of any museum for the blind. And to sound recording one might add facilities for sound movies as well as receivers for educational FM and TV broadcasts. The linking of the music of bird calls, of the sounds of the jungle, to the showing of stuffed birds and animals, would be a natural thing to do. In other fields there are available recordings of the sounds of industry, such as a steel mill, which, like similar things on the radio, bring a vivid picture of American industry.

Experimental work at Perkins has shown that even the movies have a greater than imagined value in providing information and background stories on any special subject. So far as possible, when a special exhibit is being shown in the museum, a carefully correlated movie is presented (without comment or advertising) to the pupils, and it has been found that even those totally blind, absorb valuable information from pictures with a good sound track.

To continue with Mr. Heissler:

7. *Preserved and mounted specimens:* Included in this category are the products of the taxidermist, and the preserved specimens of the supply houses.

Specimens preserved in formalin or alcohol can be removed from their containers and examined by pupils. It is advisable to wash specimens in running water and then apply lanolin to pupils' fingers so as to prevent any remaining preservative from contacting their skin.

Preserved specimens of practically every animal phylum and plant division can be shown to our pupils.

Whenever it is impossible to show important material at school a trip to the museum should be arranged.

8. *Living and unaltered specimens:* In this final and most important category are included members of both the animate and inanimate world: insects, domesticated and wild animals; trees, flowers; rocks; minerals and samples of soil. These objects may be studied in the classroom, but as soon as opportunity permits the class should be taken out of doors.

The tremendous advantage of outdoor study is the opportunity to see completely unaltered material as well as the interrelationships between all parts of nature's patterns. Soil on bare hillsides is eroded into gullies, while planted slopes are free from such damage. Tree roots split the mighty rocks, resulting in the formation of soil. A "big tree" is really big, when three or more pupils are required to join hands in order to encircle it. Bird songs and calls take on new meanings. The squawks and whistles of blackbirds become associated with the tall grass of the meadow marsh, while the deep woods provide the shrill command of the ovenbird, or the melodious warble of the thrush.

Breezes carry the scented announcement of a nearby pine woods toward which all steps hasten. The final stop is the brook, where the water, as it ripples merrily through the fingers, tells the story of the smoothly worn stones.

9. *Three-dimensional art:* Stepping from the world of science we come to the world of art; here every attempt should be made to assemble specimens of art which may be apprehended by the blind. In this category are such things as fine examples of pottery, three-dimensional carving, and statuary, as well as artifacts with historical or archeological value, such as Indian arrowheads and implements.

10. *Special collections of materials:* The importance to the blind of the organs of taste and smell has been explored by many writers, and no set of museum exhibits should fail to include exhibits or suitable material to aid the blind person in the development of these faculties. Some of them may be materials which can be observed indoors, such as perfumes, chemicals, and spices; whereas others must be found only in the great out-of-doors.

The use and coordination of the kinds of materials suggested above is largely the problem of the teacher immediately concerned with the education of the blind, but the science department or the museum curator can be of great help in stimulating the use of tactual material. Ways of doing this will be suggested later on in this discussion. The teacher will attempt to meet the needs of the pupil at the moment that the subject presents itself in the course of ordinary educational processes, while special exhibits will endeavor to stimulate the use of special materials on a more regular basis.

Based on the experience which we at Perkins Institution have had during the past decade, there are certain specific considerations in the use of a collection of museum materials that may be helpful to the person newly engaged in the field. These considerations are somewhat as follows, but the order of presentation has no bearing on the relative importance of the ideas presented.

1. The use of objects in teaching the blind should be within certain *definite limits.* The first limit is that of subject matter, which should be very specific, and the material carefully chosen. Miss Wittlin in her book previously mentioned, has this to say:

> So is an exhibition, which aims at answering similarly multiple and vaguely diverse purposes, an insoluble proposition. Just as a book is written for a certain group of readers, and a lecture prepared for a certain audience, so an exhibition cannot adequately be set up without some knowledge of its potential visitors.

Materials for such a limited subject should be so carefully chosen that a few objects will tell the story. Or, should we say that the whole story of any subject can be woven around a few objects. It has been found in actual practice, that if a group of children are to see a number of objects within a regular class period, not more than twelve objects should be presented for observation, both because a larger number cannot be well observed by a group of five or six in a short period; and also because the well-known *museum fatigue* attacks the blind much sooner than the seeing, with confusion resulting. This figure of twelve is not an arbitrary figure, but may be varied to suit the occasion.

Here again Wittlin speaks in a similar vein, although what she has to say is related to the seeing.

> The quantity of exhibits in a museum hall of orthodox character, the lack of coherence between specimens, and the insufficiency of explanation, tends to bewilder the children, to dim their consciousness, and to decrease their capacity for choice and for the formation of associations. The situation, therefore, changes and becomes educative when a limited quantity of specimens is presented to them. With their growing maturity the number of specimens may be increased, and their coherence stretched. Children of all ages vividly appreciate facilities for touching and handling objects, and opportunities for activity in the form of crafts, games, or play acting, in connection with specimens. Such arrangements are likely to enhance the clarity of the children's consciousness of their experience and their faculties for purposeful action.

II. Groups of objects shown to blind children should include *common and everyday objects.* One of the most difficult things for a seeing teacher to keep in mind in working with the blind is that the very commonest objects should be shown to blind children along with other items of less common nature. As he simply stands still and turns his head, as he moves from one room to the other, or when he makes a trip through the familiar streets of his home town the average sighted person is constantly absorbing impressions of various objects that are totally unknown to the visually handicapped. This does not mean that the scientific, the rare, or the beautiful, should be excluded from museum exhibits for the blind but that the subject under discussion should be fully explored so that items in the exhibit which might be taken for granted by the sighted will surely be included.

III. *Objects should be genuine,* especially in the field of art. They should be genuine in material and authenticity.

By this we mean that it is probable that the plaster cast of a large, beautiful piece of art would be much *less preferable* than a genuine piece of carved marble of much smaller size, for there is keen enjoyment in the feel of different materials, especially the smooth, soft, velvety, etc. There has been considerable conjecture as to the value to the blind of any so-called visual or graphic arts, and unless it be to provide the child with a working vocabulary, the value seems to be doubtful. However, there may be certain aesthetic values to be found in three-dimensional objects whose whole forms can be perceived through touch, especially if they have well designed details and significant textures. There may be an additional value from the realization of a contact with history when one handles objects that are genuine, especially if they be very ancient. A feeling of awe and reverence gradually develops from the study and handling of authentic objects of historic and artistic merit; plaster casts could never engender this respect. In the field of natural science, similarly, a living animal is highly to be preferred to a stuffed one.

IV. It should be stressed that it is a very important thing to see that all *objects* displayed to blind children are *perfect in shape, in texture, etc.* It is a common observation of those working with blind children that they are immediately attracted to imperfections in the surface of an object, and that the recollection of such imperfections often tends to take precedence over the nature or importance of the object itself. In telling of an experiment made along these lines some years ago Dr. Frieda K. Merry (Department of Special Studies, Perkins Institution, 1930) has this to say:

> Most of the children were able to identify the animals . . . but in no case was their recognition due solely to their knowledge of the characteristics of the animals. An analysis of the responses shows that twenty-one per cent were influenced by . . .
> (1) defects in the specimen (such as a broken tail)
> (2) the pose of the specimen
> (3) the hardness of the specimen
> (4) other accessories (such as stones and tree trunks as mounting material or the amount of dust oozing from the rabbit)
> This information seems particularly important for those teachers contemplating the general use of museum specimens with blind children.

If, in some circumstances, perfect objects cannot be found, the cause or reason for the blemish should be called to the attention of the child. A perfect egg-shaped stone washed by the ocean may, in its aesthetic appeal to the blind child, have a greater value than a carved marble figure which might show holes or imperfections, which thus provide a stumbling block to the exploring fingers, as well as to the mind. It has been suggested that the blind receive many of their most pleasant impressions from the memory of handling things with a pleasant feeling just as we know they also do from the sense of smell. One observer in the field of psychology of the blind, Miss Dorothy Sperry, writes:

> We have found that the blind have no visual imagery, but rather tactual imagery, supplemented, as is the sighted person's visual imagery by sensations of the other senses. This supplementary knowledge is much more important to the blind, who must patch the whole together from individual stimulations, than to the sighted, who get a whole impression.

A careful consideration of the above statement shows how important should be our attention to perfect shape, true texture, and every other *characteristic* quality of the objects which are offered for observation.

v. In connection with showing objects of any sort to the blind we should include *every phase of life*. By that is meant that we should at times give opportunity for comparison between what the visual world calls beauty and ugliness. We know that true art is a relative or comparative matter, which, in the seeing, finds its own definition in the growth of knowledge, but in the case of the visually handicapped this growth should be stimulated by giving points of comparison and standards for judgment. Just how this idea of showing various concepts of beautiful form can be implemented is a matter on which it is very difficult to make suggestions. If any attempt is made along this line it will probably surprise the teacher to discover that what may be ugly to the sighted person has certain points of beauty to the blind person, especially where the texture may be of some aesthetic meaning to the visually handicapped person. Considerable education (and research as well) is necessary along this line.

That teaching forms of art and beauty is desirable for the blind was shown in a survey made some years ago and detailed in a paper by Miss Rice Woodward at the 1940 convention of the American Association of Instructors of the Blind where she makes a plea for the teaching of design to the blind child of junior or senior high school age.

> He has the tools and the perception. The enjoyment of such projects, the originality displayed, the real love for it, show the need. The knowledge, art, beauty, he can readily grasp. He should not be deprived of the satisfaction of creating beauty, and the appreciation of symmetry it provides.

On the subject of just *how* the blind person may be introduced to art, too little research has been done, but certainly the suggestions made by the previously quoted Mark V. Shoesmith are extremely helpful:

> If art and art appreciation, aside from music and literature, are presented to the blind, it must be through the plastic arts, with some limited possibilities in the graphic for those with useful vision. Some understanding of pictorial art may be possible through descriptive means, but there cannot be real appreciation if the individual's perceptive means are so limited that he cannot truly experience the picture. Three-dimensional art, then, is the one best suited to the blind as a group.
>
> They most fully appreciate full round sculpture; next to that, very high relief. The bas-relief is difficult for them to understand, due probably to the element of perspective which is a visual experience. The movement is largely two-dimensional, and many of the artist's inten-

tions, expressed in the third movement are lost to them. In addition there is a tendency for the artist to become pictorial in a bas-relief, which makes a far too complicated pattern for the blind person to follow.

The complexities and subtleties of a composition are often confusing when viewed through the tactual sense. The composition that has many broken lines, or lines that are carried on by another form somewhat remote from the first, will most likely be missed by the blind person unless he studies the composition carefully. For example, the revealing of form beneath drapery will usually not be grasped. It is, therefore, imperative that the student, in observing a composition, be given a description of that which is apparent to the eye. The student understands more readily and is less likely to feel frustrated or discouraged. He will have a fuller realization of the essential pattern of the design and appreciate more fully the rhythms, harmony, and balance. All of this serves to enrich his store of experiences.

In addition to fullness and complexity, the size of sculptural composition is a determining factor if it is to be appreciated by the blind. A minute carving that is clearly discernible to the sight is an indistinguishable mass of the sense of touch, even when the latter is highly developed. When the student is viewing or creating, he is not directed toward miniatures and in modeling he is encouraged to create in life-size scale whenever possible. He will perceive the details more fully and get a more actual experience of the true nature of the subject.

VI. It is a very simple matter, in the case of sighted persons, to mislead or at least create confusion by showing pictures of some common object without introducing some other object for the purpose of *scaling*. How much more this matter of scaling is important in the case of the blind person is easily understood. In presenting any objects at all for observation by the blind, it is especially necessary to provide some understandable scale to go with the model in order to give an idea of size. Even this might not be sufficient in the case of an object such as the pyramids of Egypt, because the size of a man's figure submitted at the same time as the scale model of a pyramid, might be so minute as to be quite indistinguishable.

Mr. Waterhouse, previously quoted, has this to say on the subject of scaling:

> As far as possible, our models are self-explanatory. Most of them contain some object which indicates the scale. Stairs make good yardsticks in this respect, for they are practically standard. Doors and windows are almost as good. Pews in the churches, and rowboats with oars

on the decks of the ships serve the same purpose. We have felt that this is less artificial than marking the scale on a label, but where an exact measure is called for, such as a baseball diamond or football field, we have indicated size on a tablet attached to the model.

VII. Although it may seem like an extra burden of labor in staging any exhibits for blind people, it is highly desirable that every exhibit be *properly labelled,* and the labels should be of three types, viz. typewriter, bulletin type, and braille. It is not necessary that the labels or descriptions be lengthy because we should depend upon observation for telling the story; but there should be sufficient labeling to identify the object reasonably well and point out any special feature. The typewritten label is for the benefit of sighted people who may be assisting in the demonstration of museum objects. In these days there are many in a class for the blind who are partially sighted, and for these the bulletin-size type is needed; while for the totally blind the presence of a braille label not only makes self-examination of the object possible but also shows thoughtful consideration. Labeling in this manner is well worth the effort required.

VIII. *All objects should be three-dimensional.* This statement is made only after considerable observation of the reaction of the pupils at Perkins Institution, but however much it might seem that it would be possible for the blind to receive valuable impressions from objects which are in high relief, or perhaps embossed, as in the case of pictures, it seems obvious from the work done here and by others in the field that the value of anything other than strictly three-dimensional objects is very slight. Indeed, the impressions received may often be actually misleading.

Over the past hundred years there have been many experiments made in connection with this matter of (shall we say) pictures, and yet every decade there appears some new worker with a fresh idea for making (in more or less high relief) pictures for the use of the blind. At Perkins Institution thorough research has been done on this subject; especially by Ralph V. and Frieda K. Merry. Others in the field have written and discussed the subject from both the practical and the psychological standpoint, and all are in agreement that it *is* quite possible that the use of high relief in two-dimensional drawings has a value for such mathematical items as cross-sections of objects, diagrams, or as pictures of two-dimensional objects themselves, but little beyond this.

Miss Alice R. Cornelison, in a paper written in 1941 on this subject, sums up the matter as follows:

> It seems to me that the recognition of two-dimensional pictures of three-dimensional objects would necessarily be an artificially learned process . . . There would be almost no direct link in the child's experience between the embossed picture and the object itself. It has been suggested that perhaps if children were brought up on such pictures they would learn to use them to advantage. I should think that each picture would have to be taught separately, and there would be little acquired ability to generalize. That is, a child learning one picture of a house might not transfer this to the recognition of another view of the same house, or to a similar view of a different house. To me, it would seem more practical to teach that the triangular mark stood for a horse, a cross meant a colt, and a group of these inside a square was a pasture filled with grazing animals . . . I am inclined to believe, however, that in view of the danger of conveying false impressions, it is better to omit the pictures and supplement the study with actual examples, or second best—with models wherever possible.

IX. *Models should be the proper size.* An endless discussion might center around the word "proper," and much of the answer would depend upon the subject being considered, but after a great deal of experimentation here at Perkins Institution, one of the principal decisions was that models should be of such a size that they could be encompassed as a whole, by the spread of one's arms, and that the interiors of them should be so constructed that they could be accessible for observation without too much difficulty. Because they are apt to be confusing, details, especially small details, should be entirely eliminated from models of such things as buildings. If the model is too large, the person observing it is apt to lose the connection between the parts, and fail to receive an impression of the structure as a whole.

In an article published in 1950 in *The Teacher of the Blind* (English), Dr. Winifred Langan has this to say about the size of models:

> Obviously, large representations or models of objects are very difficult for the blind child to comprehend completely, but many writers have spoken of the ease with which an object not much larger than the hand can be explored and understood. Dilley says, "It is of such objects that man can most easily build up an exact representation and by 'extensive contacts' rather than detailed exploration, experience

great satisfaction in the completeness of the image he conjures up. In this image there may, of course, occur incorrect details, but we should be satisfied if a good general idea has been obtained, and no sense of frustration experienced."

x. Although it may be true, as someone has said, that experiments have shown that one of the few ways in which the abilities of the blind exceed those of the seeing is in their *speed of touch,* still it has been found that to hurry up the process of exploring any museum exhibits will defeat the purpose contemplated. There is no use in forcing the child's hands around an object; it is only through free and leisurely exploration that he is going to completely "experience" the object and the facts connected with it. This thought was indicated in the previous insistence upon offering only a small number of objects in any organized exhibit on one topic.

xi. Up to a certain point, the *repetition* and *duplication* of objects is valuable in museum practice, be it for the sighted or the visually handicapped. Through the medium of the radio and the magazines, we are all of us acquainted with the value of repetition in the world of advertising, and it certainly does no harm to show several things of a similar nature in order to make a definite point. Owing to the difficulties of time and space, it is probable that in the case of the blind child there will be no tendency to overemphasize any material.

xii. Museum work must be *supplemented* with careful research and written advice to teachers, or to those who are directly concerned with showing objects to the blind child. If the museum be a classroom museum, the teacher will be the one to provide background material for explanation, and considering the questions the children are apt to ask, it is well to be sure that the teacher provides herself with enough background on any single subject to discuss it intelligently. This will, for her, open up many new fields, which will be stimulating in themselves, in addition to making her work with the pupils more interesting.

xiii. Museum work or object teaching should be *coordinated* with every phase of school life, and not, as it so often is, made extra-curricular activity. European educators have been much more aware of this fact than those in America. A classroom schedule for a school for the blind in Dresden in 1835, and for a similar school in Breslau in 1820, both show considerable time definitely scheduled each day for object teaching, and, as indicated in another chapter, it is obvious that our own ideas at Perkins were developed after a study of European methods in the mid-nineteenth century.

That this condition is true in Europe today, is shown by a report on this subject prepared for this study by Miss Irmtraud Pflumm of the school for the blind in Stuttgart, Germany. This report covers conditions in 1949, and it would seem helpful here to quote at length from her report.

> Every person who comes to our school for the blind in Stuttgart is most impressed at seeing four big rooms each one of which has a big table in the center with some chairs around it. Around the walls there are big cases with all kinds of models and, of course, there is always one class sitting in this room and looking at these models.
>
> There are models of different houses, stores, and a church, a farm with stalls and everything that belongs to a real farm, and then there are models of different workshops and all the tools used, like a smithy with a fireplace, an anvil, and so forth. Then several kinds of vehicles and airplanes, cars, a model which represents a Stuttgart streetcar as well as a big train with tracks, hills, tunnels, bridges, and signals. We have a model of our school with all the buildings, from which the roof can be removed and all the rooms inspected. There is also a special model which shows the heating and water arrangements in our school; and other models which are of interest to children such as stuffed animals, enlarged models of insects, flowers, and so forth. Also we have many models for the science classes, for physics, chemistry, geography and history.
>
> All of these models are so arranged that the children can handle them and take them apart and examine the insides as well.
>
> In the first four grades, the children have every day one period in which we demonstrate to them natural objects or models of things. In the first grade, they examine the schoolroom, the bedroom, the living room, the dining room, the garden, and of course all the objects they can find in these places.
>
> The children find out that the ceiling is above, the floor is under their feet, and that the room has four corners and walls, three windows, which are made to open and close, and a door. Of course they wish to know how high the room is, how high the door, and we need a ruler to find this out. In these few lessons the children have already learned very much. They have received real impressions of a room, and they find out the exact meaning of many expressions like high and low, round and curved, heavy and light. Most of the children

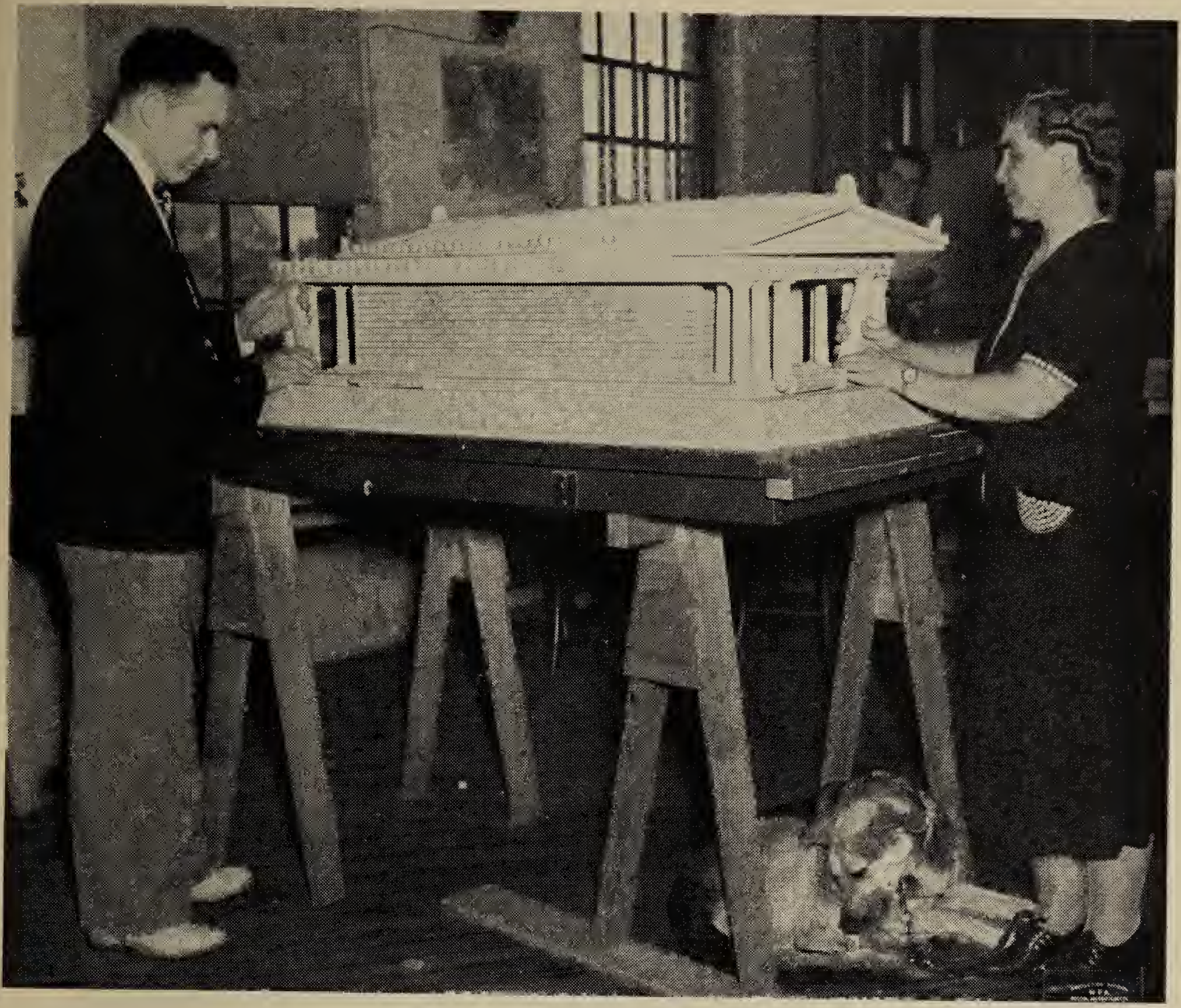
who come in our first grade are very shy and anxious during the first few days and weeks, and much patience and many good ideas are needed to make the children willing and eager to look around. Therefore we look at many pleasant small objects like models of cats or of a streetcar which they can play with, and thus the child gets acquainted with objects and learns how to handle and feel them.

We do not always demonstrate simple things, which will have no connection with other lessons, but we always have one unit available for several days a week. The units we have in the first grade may be such things as *our schoolroom, our house, our garden, the animals in our school, a farm, a store,* and so forth. Lessons in other subjects such as reading, writing, arithmetic, and so forth are always based on these units. In this way we learn how things look, we stimulate the curiosity of the child, and very often the teacher or one of the children can tell a story about one of the objects we are looking at. But always it is most important that the child gets the impression of form and details when touching and handling the objects. These lessons are always much fun for the children, and most of them do not think of them as lessons; instead they think that it is a wonderful play and they are always very eager to touch the objects and to know about them.

For the next higher grade we take a new unit, like *Our forest and what grows and lives in it, Our church, Traffic problems, Craftsmen in the town, Our heating and who gives us the coal, where it comes from,* and many more similar subjects. We always try to give the children first an impression of the thing as it is found naturally. This means, when we demonstrate in our classes a special animal which is found in the woods, such as a fox, we go into the woods and look for a real fox hole, and the children feel the hole in the ground and see how carefully the fox has hidden it, and maybe we can find a second entrance which is hidden also. When we come home, the children are very eager to see what the fox looks like, and now they feel the stuffed fox very carefully. Then we can dig a fox hole in our sandbox (of which there is one in every classroom) and try to model a fox in clay. In this way the teacher can ascertain whether the impressions of his students are correct. For the children themselves the experiment strengthens their ideas of things, and means much fun for them.

In the higher grades we have no regular lessons assigned to look at objects, but we always demonstrate to our pupils the natural things or the models when we meet some new words in reading or in lessons. Of course we always have to use the models in our lessons in biology, geography, zoology, and physics.

Because of the constant use of our models there is always something to repair, and very often a teacher thinks he very much needs a new object to interest his pupils in a certain subject. For that purpose we have a big school workshop in which the teachers themselves make new models and repair the old ones. Very often the students help in



Adult blind exploring the architecture of the Parthenon. A model made especially for the blind.

Model of a city center helps the blind to orient themselves when they go to town.

Pupils at Perkins Institution exploring a model of an ocean liner especially exhibited by the maker for the benefit of blind pupils.

> this work. In such a way our institution for the blind in Stuttgart tries to give its students all the impressions which sighted children get through their eyes. The words are no longer without meaning or content and the language of our blind children becomes richer and more colorful.

It will be seen from the above quotation that the essential part of this program for the use of museum material in the school is that of relating the objects themselves to other subjects, of enlarging the horizons, and relating the facts to life itself. The importance of such seemingly simple functions is well summed up in the discussion of museums for sighted children by Miss Wittlin, from which previous quotations have been given. In one place she has this to say:

> While passing from hand to hand, the component parts of the set will be named, will be brought into comparison with the habits and experiences of the children themselves, and will cause distant lands, periods, and processes hitherto unknown, to appear on the hinge of personal experience. In addition to information supplied by the children, the children will add the facts which they, themselves, have found through observation, and in the form of answers to questions rising in the sessions.
>
> Whatever the contents may be, their relation to human beings should be stressed. Men should learn and know more about man: about human conduct and human motives. If children learn to value matters—be it a mineral, a battle in history, or a new technical device—in relation to their function in human life and to their contribution to social ends, they will develop standards of value. The realization that he is at the top of the scale of the universe will engender in the children responsibility and enthusiasm for contributing to that fabulous success of evolution, to a victory without national limitations.

In closing this section on models and materials, it is interesting to note the different reaction that different teachers have to the use of materials such as we have been discussing. Many have a keen sense of the importance of this subject and have developed it in their own way to the great benefit of the child, while others consider education by the tactual method to be of incidental and secondary importance. It would seem, however, that just as the public consciousness is in general awakening to the great educational value of museums of all kinds, so we dare to believe that all of those interested in the education of the visually handicapped should become more conscious of the needs in the curriculum for a well-organized conscious development of tactual education. Dr. Richard S. French, a noted educator in our field, wrote with David H. Morgan in 1943 in *The Journal of Exceptional Children,* an article which reinforced a great deal of that which has been said in this chapter.

The key to objectification of the learning process, then, lies in meaningful actions rather than an attempt to translate experience into pseudo-visual intellections. It is essential that the child, especially the one blind from birth, be given the richest background possible of *actual* experience if he is to develop adequate concepts of the environment in which he lives. The teacher must ever be on the alert to guard against accepting verbalization for learning.

The Museum at Perkins Institution and Its Use

A natural question by the reader at this point might well be: "Do you practice what you preach?" "To what extent have the principles as laid down in the preceding chapters been implemented with the actual use of models, and other materials in your museum?" In answering these questions, the author lays no claim to anything approaching one hundred per cent accomplishment by the committee which manages the museum, nor by the teaching staff at Perkins. The necessities of a greatly ramified program press in on the teachers at every side with demands for time, while the promulgation of exhibits has been done largely on a "side-line" basis by those of us who are especially interested, and it is quite likely that other schools for the blind may be able to make better use of smaller museum collections than Perkins does with its large one. Be that as it may, there may be ideas of value to someone, in the accomplishments of the last decade of the work here at Perkins, and for what they are worth, a record of the workings of the Museum Committee is here presented.

The word "committee" is used here because our work has been done not by one person, but by two persons working together to make our museum "live" and in cooperation with the teaching staff. In 1939 the author enlisted the aid of Miss Frances McGaw, a teacher in the Manual Arts Department, and with the cooperation of the then curator of the museum, Miss Mary Esther Sawyer, was granted permission to conduct experiments looking to the greater use of tactual material, as well as a chance to rehabilitate (without cost) the museum as then constituted. Since that time, the writer has himself accepted the post as curator, and makes this record to bring to focus the ideas which are the result of the operations of the twelve years past.

As indicated, there have been two parts to the work at Perkins —utilization and rehabilitation—and in that order. Throughout the years the objective has been the stimulation of the teachers in the use of object-teaching materials, and after that, such general care and rehabilitation of material at hand as time would permit— and the job is far from complete.

The collection of material at Perkins Institution consists of material in the following categories:

Animals
Archeological
Architectural
Artistic
Birds
Botanical
Commercial
Geographical
Mathematical
Minerals
Reptiles
Scientific
Sea life
Technical

Much of the material is as it was originally provided by purchase in 1889-1890, but new material is added from time to time through purchase, gift, or "assemblage."

As suggesting the sort of things which might be needed for anyone attempting to secure a new collection for a similar school, a few notes on our collection might be helpful here.

Animals: One could wish that a museum for the blind could include well mounted specimens of the larger creatures that all children read about—the lion, the tiger, the elephant, and so forth, but most of us must depend on the kindness of city museum curators to make these available. A suitable collection in this group might include, as does ours, representatives of the most common fur bearing animals including skeletal material as well as stuffed skins. *Homo sapiens* is represented in the Perkins collection by dissectible manikins, by a complete skeleton, and by large and full-scale models of various parts of the body.

One area of fauna which seems to be largely out of the range of the blind is that of the entomological field, as actual specimens of bugs of all kinds are extremely perishable, and models of a size large enough to be observable are prohibitively expensive.

Archeological: In this group may be listed our collections of Indian relics, (which can always be supplemented by loans from local museums) as well as items from Egypt, Greece and other countries.

Architectural: Here, thanks to a WPA project in the 1930's, we have a fine assortment of detailed scaled models (dissectible) of everything from a Greek temple to a skyscraper. These are stored in a special room, where they may be observed or moved to a classroom for longer study. A medieval castle which may be "built-up" from small parts has been of special interest to grades six to eight.

Artistic: Our collection here is small, but a few items found under various headings as above, make it possible to organize displays as needed in this area. Some authentic Greek pottery, Egyptian alabaster, examples of native American arts, plus quite a good collection of dolls of various countries are items not to be ashamed of.

Birds: As one cannot very well catch and handle the common birds, resort must be made to mounted ones. Perkins has hundreds of specimens, but actually the most used ones are the native birds, and these can usually be obtained from a local taxidermist.

Botanical: Here we have a large set of greatly enlarged papier-maché models of the floral world which cannot be duplicated, from fungus to composites, plus many samples of tree parts, tree shapes, seeds and so forth. Enlarged, three-dimensional models of plant cells, and so forth, (which can now be obtained made of unbreakable plastics) make this section of real value to the teacher of nature, biology or general science.

Commercial: Included here are models for such things as docks, ships, canals, trains, and so forth.

Geographical: This material is to be found largely in the classrooms of the social studies department of the school. It consists almost entirely of globes, embossed maps, astronomical devices and the like.

Mathematical: The same is true here as of the above, the material consisting of simple devices such as fractional apples and other simple devices and ranging up to rather complicated models valuable for geometrical studies.

Minerals: A more than ample assortment of minerals for which but little use has been found, as the need for the comprehension of these by the blind is perhaps even less important than for the seeing. The tactual feel or shape of the mineral gives very little idea of the end use or appearance of the product. Of greater value, perhaps, would be a collection of models of shapes of crystals which might be used in the advanced science classes.

Reptiles: A live turtle, easily obtained anywhere, is much to be preferred to an ancient stuffed one, but certainly any collection such as this should include models and specimens of snakes, toads, frogs, and other examples of this class of life which is usually so hard to use in the live form.

Scientific: A well-equipped laboratory for the study of physics and biology contains many forms of models and scientific apparatus especially designed for the use of blind students.

Sea Life: A fine collection of shells is something anyone could easily obtain, and aside from their scientific value, they are excellent for the demonstration of variety and beauty of nature's forms. They are, perhaps, the one example of art in nature which is available to the blind, for included here are examples of the prototype of dynamic symmetry—the chambered nautilus.

Less valuable are examples of coral and similar low forms of marine life as well as a variety of stuffed fishes. In this area we have found that fish molded in rubber from live models are more useful than hard stuffed ones, and here also, the common local varieties of fish are more useful than exotic forms.

Technical: The museum possesses a number of special exhibits representing technical processes, such as the manufacture of glass, papermaking, coal mining and so forth, which are available for classroom use as needed.

From time to time we are able to augment these collections with modest purchases, with gifts from commercial concerns, with storable exhibits prepared on special subjects, and from "white elephant" donations from private collectors. Care has to be exercised in accepting gifts of items which might be only space fillers, and this must be coupled with a firm will to discard things which are damaged or which can no longer serve a useful purpose. This matter of collecting and keeping exhibit material demands hard work, discrimination and cash, but it is in the use of the material that the real test of the museum comes.

In regular classroom work, be it in the kindergarten, the primary school or the upper grades, the teacher in our school has this wealth of material from which to draw in making real the animal story, in teaching geography or in more advanced subjects such as science and mathematics. Probably *every* school for the blind has more or less of the material which we have described, and the problem is to be able to produce the object or specimen at just the right moment, and to integrate it into classroom procedures. One teacher, Mrs. Alice Chatfield, in addressing the American Association of Instructors of the Blind convention in 1940, made some very helpful remarks on this subject:

> Not all classes can utilize the models in equal amount or with equal benefit. It is appropriate, then, at this point, to consider the following when preparing to use a model:
>
> 1. What are the objectives of the unit?
> 2. Which models will be most helpful in achieving these purposes?
> 3. How well do *I* know this particular model?
> 4. What supplementary printed materials are available to help me in its use?
> 5. At what point in the unit should I introduce the model?
> 6. What do I expect to accomplish at this point?
> 7. What activities and projects might be started as an outgrowth?
>
> Criteria for using the models from pupil's standpoint:
>
> 1. Do the pupils accept the model for enjoyment or is there behind this a question for aid in solving their problems?
> 2. Do the pupils accept the model at face value, or do they make the comparisons and weigh values?

3. Do they check textbook statements?
4. Does the model fit the work being done by the class?
    a. Are doubtful points explained?
    b. Are explanations pertinent?
5. Is follow-up work carefully planned? Does it summarize what was used and link it with other class work?

A great many of the teachers at Perkins have followed much the same methods as those outlined so well by Mrs. Chatfield, and with comparable results. But much of this relatively fine collection of materials which was available for the pupils (and occasional visiting adults) is useful only when exploring some special phase of life or natural history lessons, and the problem which faced our committee was largely one of how, in addition to the classroom uses, to relate the material to everyday living, and how to exhibit objects in such a way as to enlist the enthusiasm of the teacher to the point that museum material might be used even more than in the too occasional classroom units. Agreeing as we do with the philosopher Albert North Whitehead, that "there is only one subject matter for education and that is life in all its manifestations," we hit upon the plan of showing at regular intervals a group of objects related to just one facet of life, hoping that the teachers in either the Upper or Lower Schools might find it a stimulation to some extracurricular presentation of facts.

The plan of special exhibits which was then named *The Exhibit of the Month,* has been continued regularly since 1939, to a total of over one hundred. As perhaps best showing the wide variety of topics treated, a complete list of the first one hundred exhibits follows:

EXHIBITS OF THE MONTH at Perkins Institution, 1939-1951

Season of 1939-40

NO.
1. Nature in the Fall
2. Winter Birds
3. North American Indians
4. Story of Fossils
5. Egyptian Art
6. Bird Songs & Calls
7. Life in a Tide Pool
8. Nature Trail

Season of 1940-41

NO.
9. Wheat & Bread
10. Common Vegetables
11. Smells & Spices
12. Trees & their Bark
13. Glass
14. Transportation
15. Asiatic Art
16. Gems
17. New England Animals

Season of 1941-42

NO.

18. Story of Paper
19. Pilgrims and Puritans
20. Nuts
21. Schools of the XIV Century
22. Synthetics and their Uses
23. Birds and their Bills
24. The Arts of Greece
25. Story of Asbestos
26. Perkins Wonderland

Season of 1942-43

27. Seed Time and Harvest
28. Beauty of Shells
29. Evolution of the Skull
30. European War Theatre
31. Uniforms and Armor
32. Strategic Minerals
33. Story of Money
34. History of our Flag
35. Musical Instruments
36. Beating the Bounds

Season of 1943-44

37. Arming the Farmer
38. Home
39. Products of Trees
40. Heat
41. The Story of Coal
42. Pacific Atolls
43. Growth of a Seed

43a. Egypt Redivivus

44. Common Trees
45. Our Museum Resources

Season of 1944-45

46. Suggestions for Teachers

N.B. This scholastic year was spent by the committee in various jobs of cleaning and rehabilitation.

Season of 1945-46

NO.

47. Harvest Home Festival
48. The Land we Live in
49. New England Wild Life
50. Housing in New England
51. Early New England Industry
52. Cultural New England
53. New England Natural Resources
54. New England of the Future

Season of 1946-47

55. Story of Bread
56. Orchestral Instruments
57. Christmas Symbols
58. American Indians
59. Taste and Smell
60. Household Tools
61. Fauna of Perkins

Season of 1947-48

62. Facts about Perkins
63. Story of Seeds
64. The Importance of Corn
65. Nature in Art
66. The Oak Tree
67. Making Maple Syrup
68. Plant Resurrection
69. Peru and its Plants
70. Nature Trail

Season of 1948-49

00. Display of Vegetables

71. Jewish Ceremonials
72. Primitive Musical Instruments
73. Musical Demonstration
74. Organ and Piano
75. Orchestral Instruments
76. Diamonds & Jewels
77. Rogation Days

Season of 1949-50

NO.
78. The Art of India
79. Nature's Documents
80. Evolution of Language
81. Writing and Printing
82. Declaration of Independence
83. Making of Paper
84. Printing for the Blind

Season of 1950-51

85. Food: Cereals
86. " Bread
87. " Vegetables

NO.
88. " Fruit
89. " Spices
90. " Dried Foods
91. " Meats
92. " Fish
93. " Sugars
94. " Dairy Products
95. " Drinks
96. " Packaging
97. " Gardening
98. " Preserving
99. " Imports
100. " Recapitulation

It will be noted that in some years the entire series has been concerned with one major topic (as food in 1950; New England in 1945) with each exhibit being limited to some one aspect of the subject. In other years the plan was so devised that a different area of study was explored each month, such as the year 1941-1942, in which, successively the exhibits covered the fields of commerce, history, botany, education, science, ornithology, art, minerals and nature. The exhibits are planned as a series a year in advance, two months' headway being allowed in the preparation of individual exhibits. Thoughtful planning is of the greatest importance in this work, keeping ever in mind the various positive and negative suggestions indicated in the previous chapters.

After all the material is assembled and has been weeded out to keep within the average of twelve items approximately, a bulletin of general and specific facts is written about the display, remembering that the need of the teacher is to have a short simple story to give her class. But the actual approach to the use of the exhibit is in the hands of the class teacher, who, knowing her group, will tell as much or as little of the story as she feels necessary, and will use one or another angle of thought.

As indicating the way in which the material of an exhibit may be emphasized in different ways, consideration might be given to the materials which were assembled in the study of the oak tree (No. 66).

Objects shown were:
acorn—natural object

acorn—magnified about 100 times
oak seedling—large model
section of oak tree trunk—actual specimen
section of oak trunk—dissected model
leaf—magnified cross section
winter buds of oak—natural object
tree trunk—arranged to show annual rings
oak leaves—dried
cork oak bark—natural object
scaled shaped model of white oak tree

Given this material, what shall be the teaching approach? Here are some possible choices:

The Scientific:—The Study of Botany and Natural Processes.—The teacher of primary classes will want to grow a few bean seeds to show the most elementary of facts—seed growth. The oak seedling enlargements and the acorn in the exhibit can well be used in connection with the bean lesson to show what is inside the seed and what happens.

The teacher in the Upper School will want to use such models as that of the leaf, to show more advanced processes.

The Nature Lesson:—The wonders of nature can be demonstrated here, as shown by nature's packaging of winter buds.

The identification (for the blind) of the oaks and other trees by their buds.

The shapes of leaves and the trees as part of basic nature information.

Social Studies:—

History: The importance of tree rings in dating American history. Historic oak trees of Europe and America. (As one example, the "Charter Oak" of Connecticut.)

Economic: The contribution of the oak tree to world economy; the supplying of cork, tannic acid, lumber and so forth. (What a story can be told of the development of the shoe industry in New England thanks to the presence of plenty of oak bark.)

Literature and Philosophy:—A discussion of oaks as a symbol of strength. The oaks have been likened to the lion among animals and the eagle among birds.

A discussion of the oaks and the druids of England. The oaks in literature generally.

Languages:—The teacher of languages will find an interest in the development of the names for oaks, both the Latin forms and the English forms, as well as many other stories to be found in plant names.

One might go on in this way through almost every field of learning and find places of application whereby this one series of items from our museum could be used to demonstrate interesting facts and deductions. We might, indeed, paraphrase the old proverb, "mighty oaks from tiny acorns grow."

It need only be said further in connection with these "one subject exhibits", that once the exhibit is prepared and the bulletin issued, the use to which it is put depends upon the teacher. Exhibits generally are made available for a period of from three to four weeks, some, in fact, being kept as permanent exhibits in our collection. No pressure is put on anyone to use the exhibits, but as many as from one hundred to one hundred and fifty pupils may be taken to view the displays by various teachers. Certain teachers will want to have the exhibit sent to their classrooms after the regular period, to make a more leisurely examination than the average forty-five minute class period will permit.

Just one word on the business details of such work. Because of the backlog of material which was available at Perkins, because of the help from local museums of every nature, and because of the helpfulness of many commercial concerns in furnishing materials, our project has been run on the proverbial shoestring. The monthly exhibits have cost little or nothing, and the replacement costs for permanent exhibits has not averaged fifty dollars per year. The mimeographing costs and the occasional brailling of bulletins has been absorbed in general school costs, and as both members of the committee were employed in other capacities, the salary budget has not been a problem. These facts are given to show that any school for the blind may with small cost work out plans of a similar nature to encourage this all-important tactual education.

And now having discussed at perhaps too great length the theoretical and specific considerations in the use of the museum at Perkins Institution, the author has kept one adjuration until the end, and that is, as has been hinted, that one should not forget that the place to study life and nature is out-of-doors in God's museum, and not among often misshapen stuffed animals or empty shells.

A visually handicapped graduate of Perkins Institution, Ruth

R. Hayden, has written some words anent this which make an apt conclusion:

> What the blind can see depends upon the richness of our contacts, and the breadth of our experience; and since nature is the pattern of life, it is the essential element of experience. For the blind, an acquaintance with nature, indeed a warm friendship for her, is the one normal and alleviating influence available to us.
>
> . . . Someone must remember to show us the things that are out of reach, and explain them to us. So much must be left to the imagination—the stars, the meaning of vistas, the expanse of the sea, the expression on people's faces; there are so many things we can never touch that everything possible must be intentionally brought within our reach.
>
> . . . and we must gather our experience while we are young so as to feed on it when we grow up, for the fruitfulness of life depends upon the richness of our early training. This puts a heavy responsibility . . . on teachers. Just as the farmer prepares the soil for the seed, so the teacher prepares the hearts and minds of the children for the emotions and philosophy of later years.

Bibliography

Allen, Edward E. "Museums for the blind." *World Conference on Work for the Blind,* New York, 1931. pp. 197-207.

———. "Opening windows on nature for blind boys and girls." *School Life,* 17, 1931. pp. 21-22, 31.

Bechtold, E. "Die Naturbeobachtung des Schülers in der Blindenanstalt." *Blindenfreund,* 40, 1920. pp. 157-164.

Burke, E. A. "Laboratory work in science for the blind." *Teachers Forum,* 4, 1932. pp. 48-49.

California School for the Blind Staff. "Teaching of nature study." *Teachers Forum,* 2, No. 1, 1929, pp. 6-7.

Chatfield, Alice. "Capitalizing the value of models to meet the demands of the current trend in primary education." *American Association of Instructors of the Blind,* 1940. pp. 52-54.

Cornelison, Alice R. "The use of museums." Perkins-Harvard Course paper, 1941. (Typewritten)

Deas, J. A. Charlton. "The showing of museums and art galleries to the blind." *Museum Journal,* 13, No. 3, 1913. pp. 85-99.

Diderot, Denis. "Letter on the blind for the use of those who see." *Early Philosophical Works,* translated and edited by Margaret Jourdain. Chicago, Open Court Publishing Co., 1916. pp. 68-141.

French, Richard S., and Morgan, David H. "Objectivity in the education of the blind." *Journal of Exceptional Children,* 9, 1943. pp. 199-202, 223.

Gaedeke, C. "Der naturkundliche Unterricht in der Blindenanstalt." *Blindenfreund,* 7, 1887. pp. 97-101, 113-117, 129-132.

Heissler, William T. "The need for three-dimensional instruction in science curricula." *American Association of Instructors of the Blind,* 1946. pp. 103-104.

Hill, O. J. "Another beam of light through the darkness." *Teachers Forum,* 11, 1939. pp. 62-65, 72.

Langan, Winifred. "Our blind children—Part II." *Teacher of the Blind,* 38, 1950. pp. 56-58.

Mell, Alexander. *Enzyklopädisches Handbuch des Blindenwesens.* Vienna, A. Pichlers Witwe & Sohn, 1900. pp. 542-545.

———. *Der Blindenunterricht.* Vienna, A. Pichlers Witwe & Sohn, 1910. pp. 154-179.

Merry, Frieda K. "A study of the merits of animal models used in teaching blind children." *Teachers Forum,* 2, No. 3, 1930. pp. 12-13.

Perkins, H. F. "Museum exhibits for the blind." *Outlook for the Blind,* 33, 1939. pp. 120-121.

Ramsey, Grace Fisher. *Educational work in museums of the United States.* New York, H. W. Wilson Co., 1938. 289 p.

Read, Herbert. *Education through art.* New York, Pantheon Books, 1946. 320 p.

Sheldon, Dorothy Dean. "The blind child in the world of nature." New York, American Foundation for the Blind, 1929. 8 p.

Shoesmith, Mark. "The value of art to the visually handicapped." Master's thesis, Teachers College, Columbia University, 1941. 27 p. (Typewritten)

Sperry, Dorothy. "Space perception of the blind." Perkins-Harvard Course paper, 1934-35. (Typewritten)

Stainton, E. "Nature study class." *Outlook for the Blind,* 24, No. 1, 1930. pp. 34-35.

True, N. A. "Museum work for partially and totally blind children." *Teachers Forum,* 2, No. 3, 1930. pp. 2-4.

Turner, S. "Making use of our museum." *Teachers Forum,* 2, No. 5, 1930. pp. 12-13.

Waterhouse, Edward J. "Enrichment through models." *American Association of Instructors of the Blind,* 1940. pp. 148-149.

Wittlin, Alma S. *The museum—its history and tasks in education.* London, Routledge and Kegan, Paul, 1949. 297 p.

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